

This Page Is Inserted by IFW Operations
and is not a part of the Official Record

BEST AVAILABLE IMAGES

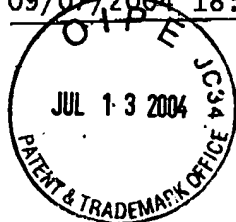
Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images may include (but are not limited to):

- BLACK BORDERS
- TEXT CUT OFF AT TOP, BOTTOM OR SIDES
- FADED TEXT
- ILLEGIBLE TEXT
- SKEWED/SLANTED IMAGES
- COLORED PHOTOS
- BLACK OR VERY BLACK AND WHITE DARK PHOTOS
- GRAY SCALE DOCUMENTS

IMAGES ARE BEST AVAILABLE COPY.

**As rescanning documents *will not* correct images,
please do not report the images to the
Image Problem Mailbox.**



SEQUENCE LISTING

<110> INSTITUT PASTEUR

<120> COMPOSITIONS AND METHODS FOR DETECTING MULTIDRUG
RESISTANT STRAINS OF M. TUBERCULOSIS HAVING MUTATIONS
IN GENES OF THE *mutT* FAMILY

<130> B5404BA AD/LV/SDU

<140> 10/777,131

<141> 2004-02-13

<150> 60/311,824

<151> 2001-08-14

<150> 60/313,523

<151> 2001-08-21

<150> PCT/EP 02/09679

<151> 2002-08-14

<160> 32

<170> PatentIn Ver. 2.1

<210> 1

<211> 21

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Primer

<400> 1

tccggatgat gatttacctc c

21

<210> 2

<211> 17

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Primer

<400> 2

tccgccgggt cggggac

17

<210> 3

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Primer

<400> 3

tcgaaggtyg gcaaactgtg

20

<210> 4
 <211> 19
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Primer

<400> 4
 tgggggttcgc tgggaagtgg 19

<210> 5
 <211> 17
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Primer

<400> 5
 agccgcgtag gtaacct 17

<210> 6
 <211> 17
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Primer

<400> 6
 tgctcagaca tcgcag 17

<210> 7
 <211> 17
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Primer

<400> 7
 cagcgcgcgc tggcgcc 17

<210> 8
 <211> 17
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Primer

<400> 8
 gactcagccg clcgca 17

<210> 9
 <211> 20
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Primer

<400> 9
 ccggcgacga atcgctcgtt

20

<210> 10
 <211> 20
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Primer

<400> 10
 agctgggaca gtcgtcgcgg

20

<210> 11
 <211> 20
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Primer

<400> 11
 tacggtcggc gagctgatcc

20

<210> 12
 <211> 19
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Primer

<400> 12
 tacgqcggtt cgatgaacc

19

<210> 13
 <211> 21
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Primer

<400> 13
 gagagtttga tccgggtca g

21

<210> 14
 <211> 20
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Primer

<400> 14 20
 tgcacacagg ccacaaggga

<210> 15
 <211> 18
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Primer

<400> 15 18
 ggccgacaaa cagaacgt

<210> 16
 <211> 18
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Primer

<400> 16 18
 gttcaccnaac tgggtgac

<210> 17
 <211> 2488
 <212> DNA
 <213> Mycobacterium tuberculosis

<400> 17
 ttggtaacaa aqttcgaggg qgacqcgthc ctaaccatct tcggcgcccc gaaccggctt 60
 cctgttcccc aagacaaagg actggccgcc ycgccggcga lagccgatcg gctgggtcaac 120
 gaaatgcccc agtgccaggg cgggatcggt gtggcgcgcg ygcaggtcat tgccggcaac 180
 gtgggtgccc qagaacgggt cgagtaaccc gtgatcgggg agccgggtcaa cgaggcgggc 240
 cgattgtgcg aactggccaa atcgcgctcc ggcaagttgc tggcttcggc acaggccgtg 300
 gacgcgcgaa qcgaaqagga gcgcgcgcgt tgggttttgg gtaggcattt gaaacttcgt 360
 gggcacgacc aaccgggtcc gctggccaaq ccggtcgggc tgaccaagcc gcgtaggtaa 420
 cctgcccga aacacgacga ccccatcaca atgtcgtttt tccgccagtc atgtcggtgg 480
 gcqgggtgtaa ttgttgaaag gtgcacgaag acttcgaacg ctgctaccgg gcgatccagt 540
 ccaaagcgc ccggttcgac ggctgggttc tctgctcggt tttgaccacc ggtgtctact 600
 gccggccgag ttgcccgcgt cggccacnct tcgcgcgcga tgtccggttc ctgccgactg 660
 cggcgccgac tcaggggggg qgattccggg cctgcaaacg gtgcngcccc gacgcctcgc 720
 ctgggtctcc ggaatggaat gtgcgtagtg acgtcgtggc gcggggcgatg cggctgattg 780
 ccgacgggaa ggtggaccgc gacggtgtca gcggcctcgc ggcccagctc ggttacacca 840
 ttcgccagct ggagcggctg ttgcaggccc tggtcggcgc cggtcggctc gegttagccc 900
 gcgcncaaay catgcagacc gcccggtgct tgatcgagac caccgaacct ccgttcggcg 960
 atgtcgnatt cggcccgggg ttttcagca tccgtcagtt caaccgaccc gtlcgcctgg 1020
 cgtgcgacgg caacacgacg gcattgcgtg cgcgcggcgc cggccgattc gagtctgcca 1080
 ccgcctcagc gggcacgggt tgcgtcgggc taccggtccg tgcaccattc gcttcgagg 1140

```

qtgttttcgg ccatactggcc gccaccggcg tgcggggttg cgaagaggtc cgcgatgggtg 1200
cgtaccgacg cagcctaagg ctcccatggg gcaacggcat cgtcagcctg acgccggcac 1260
ccgatcalgt gcgclgccc ctgtgtctcg atgatttccg cgacctgatg acggccactg 1320
cacgttgcgg acggctgctg gacctcgacg ccgatccga aacgatcgte gaggcgctgg 1380
gcgcgacatc ggatctgcgc gacgtggtgg gcaaggcacc cgggcaacgc attccccga 1440
cagtcgacga ggcagaatc gccglgcggg cggctctcgc ccaacaggta tcgacgaagg 1500
ccqcaagcac tcacgcgggc cgaactggtg ccgcctacgg acggccggtc cagcatcgcc 1560
acggcgcttt gaaccacacc ttcccgtcga tcgagcagct cgtcgagatc gatccccgcc 1620
atctggccgt cccaaggcgg cqlnaaagg aataaaacgc gctcgtcgcc agccttgccg 1680
acaaaagtct gglectggac gccggatgtg actggcaacg cgcgcgggg cagttgctag 1740
cgtcgcccg agtgggccc tggaccggcg aggtcatcgc catcgcggg clcggtgacc 1800
cggacgcctt tccggccagt gatctcgcc tgcggctggc cgcnaaaaag ctgggctgtc 1860
ctgcacaacg angagccctg acgggtgcac gcgctcgtg gcgccctgg cgtcctatg 1920
ccaccacgca cclgtggacc acctgganc atccggtaaa ccaatggcca ccgcaggaga 1980
aqatcgcatg attcaatacc gacccatcga tagcccatc gggccattaa cctggcgcg 2040
gcalggctcg glttgacga acctgcgat gctcgagcag acgtatgag caagccgcac 2100
aactggaca ccgcacccc ggcattttc tggcgctgtc gaccaactca acgcttattt 2160
cgccggcgag ctcaaccgat tggatgtgga actlgacetc cggggaaccg actttcagca 2220
acqagtalgg aaagcattgc tgacaalccc gtacggggaa acccggtcct acggggaaal 2280
cgccgaccag atcggcgcc ccggcgccgc acgcgcgtg ggattggcca acggccacaa 2340
tcctatcgcc atcatcgcc cgtgccacc cgtgatcgcc gccagcgga agctcaccgg 2400
gtacggcggl ggaatcaacc ggaacgaac tctgctcgag ttggagaaaa gccgggcgcc 2460
cgcgacttg acgctcttcg actgagcg 2488

```

<210> 18
 <211> 895
 <212> DNA
 <213> Mycobacterium tuberculosis

```

<400> 18
ggctcggtg accgggagc ctttcgggc aqtgatctg gctcgggct ggccgcaaa 60
aagctgggc tgcctgcaca acgacgagc ctgacgggtc acagcgctc ctggcgccc 120
tggcgctcct atgccaacca gacatgtgg accacctgg aacatccgt aaaccaatg 180
ccaccgcagc agaagatcgc atgattcact accgcacat cgatagcccc atcgggccat 240
taacccctgg cgggcatggc tccgtgttga cgaacctgg gatgctcgag cagacgtatg 300
agccaaqccg cacacactgg acaccgacc ccggcgcatl ttclggcgct gtgaccaac 360
tcaacgctta ttgcgcggc gacgtcacc aattcgatgt ggaacttgac ctccggggaa 420
cgcactttca gcaacgagta tggaaagcat tctgacaat cccgtacggg gaaacccggt 480
cctacgggga aalcgccgac cagatcgggc ccccgggcgc cgcacgcgc gtgggatttg 540
ccaacggcca caatcccatc gcuatcatc tcccggtcca ccgctgacg ggcccgagcg 600
gaaagctcac cgggtacggc ygtggaatca accggaaacg agctctgtc gatgtggaga 660
aaagccgggc gcccgagac ttgacgctct tgcactgag gcccccgcgc gcgaggggat 720
cgtcatttgc aaatccqag ccataattc ccgctcgcg acgggctgag tcgatataaa 780
catacaaaaa caccaccgtt accgggggtg ttttggatg ttggcggtg tcclactttt 840
ccaccggag gggcagtatc atcgycgctg gcaaggctag cttccgggtt cggaa 895

```

<210> 19
 <211> 823
 <212> DNA
 <213> Mycobacterium tuberculosis

```

<400> 19
gatgtccgga tgatgattta cctcctcggc tgcctcgcc acccgcgcta cggcgctgat 60
accggccala aacgtcgga acttgattga cctacgcagg acaccacgg ccgctgcca 120
gccgttgagg tctgacagt cggcgctgac ctgctcatc gtaaacacg ccataactc 180
acgglatacc qtcacaggtc atgctgaac agatcgtgt tgcggagcc aicgtcccg 240
gttgcaaggc ctlggtggc caacgcgtt gccacggga gttggcggt cgttgggaac 300
ttccggcgcg taaggtcgcc gccgcgnaa ccgagcgcc cgcgctggc cgaagctcg 360
ccgaagaaact gggactcgag gtgcgcgacc tccgggtggc gacccgtgt ggcgacgata 420

```

```

ltgcgltgaa cggcaccgag acgctcgggg cctatcgctt gcatctgctt ggccgcqaac 480
cgcgtgugcg tgaccaccgg gcgctgtgct qggtagcggc ggccgaactg caccgatgtcg 540
acitgggtacc agccgacggc ggctggatlg cggacctggc gcgaacctc aacgggtccg 600
ccgcagatgl ccacngtcgc tgttaggaaa ccgacgggtg ggttagcggt ggccgcgcgc 660
aaactggltg gaacaacgtg aaaaaacglt aacttgggtt tgcattgccc tagcgattac 720
gatgggtttc tggacgcglg gcgacaactt ccgggcaggc cgtgagccc catccatcga 780
gatacccgat gtlgacgaga ggggtccccc acccggcgga ccg 823

```

<210> 20
 <211> 1144
 <212> DNA
 <213> Mycobacterium tuberculosis

```

<400> 20
tgicgctcga aggtggggcaa atcgtgcgcc ccgacacag cgacttctgt gatagatgtg 60
actggcgcgga clcaatttgt cagcgcggtt cgcctgcacc gccccgctcc ctgcgccaac 120
gaataagtcn tggccgacga tgggcgclca gaggcgaggt acatcgggaa caccgcgccg 180
taccagctac tctcgttggg gtgtccgacg gcgaacaagc caaatcacgt cgacgcgggg 240
ggcggcgccg cggggcgccg gctgcggtta cggccgagaa tcacatggac gcccaaccgg 300
cccgcgacgc caccgcgacc ccggcaacgg cgaagcgglc ccggtcccg ccaactcgtc 360
gggggtcgac tgggatgcgc accglgcacg aaacatcggc tggagggttg gtcattgacg 420
gtatcgacgg tccacgagac gcgcaggtcg cggctctgat cggccgcgtc gaccgycgcg 480
gcccgtctgt gtgglcgcta cccaaggggc acatcgagtt gggcgagacc gccgagcaga 540
ccgncalcgg cggggtgcgc gaggagacgg gcctccgagg cagtgtgttc gccgcgttgg 600
ggcgcatcga ctactggttc gtcacnagc gccggcggtt gcacaagacc gtccaccatt 660
atttgatcgg gtttttaggc gqagagctgt ccgacgaaga cctcgaggtg gccgaggtag 720
cctgggtgcc gatccgggaa ctgcggtctc gactggccta cggcgacgaa cgtcgactag 780
ccgaggtggc cgcagaaatg atcgacaagc tgcagagcga cggcccccgc gcgcttcgcg 840
cgctaccacc cagctcgccg cgtcgacggc cgcacaacgca ttcacgcgt cgtcatgccg 900
atgautcagc accgggtcag cacaacggtc ccggggccgg gccgtgaccg cactgcaact 960
cggctgggac gctltggcgc gctcaccctc agcgatcggc gtcgtggccg gcctcgggat 1020
ggcgctcncg gtaccgtcgg ccgcaccgca cgcgctcgca ggcgagccca gcccgacgcc 1080
ttttgtccag gtcggcctcg atcaggtgac ccgggacglt gtyaccactt ccagcgaacc 1140
ccat 1144

```

<210> 21
 <211> 1312
 <212> DNA
 <213> Mycobacterium tuberculosis

```

<400> 21
cgcccaggcc ttggtcgang algatclcag cggccactcg gctgtccgcg cagccgaaga 60
tcaccgcgct gggtctcttc cggcgggcca agccggtcgc gttggtcgac ctctgactgg 120
gatgtctggg cggcgccggc aggaatcgct cgttacccctc tttgagtgtc ttccacgcgg 180
ctaccggatt gtlgttgggc atgcttcaca tactgcggga accgtcggtg accggccgcg 240
gaacacatate agataccaat cttctcgctt ggtatcagcg atcgcaacgg gatctgcct 300
ggcgagagcc cgggtgacgc ccgtggcaga tccgtgtcag cgaattcatg ctgcagcaga 360
cgcggcgccg ccgggtgctg gcgatctggc cggactgggt gggcggttg gccacgcgt 420
cggccacggc caggccagc acccgccgat tgttaucgac ctggggcaag ctgggctatc 480
ccaqgcgagc caagcgctta cagagtgccg ccaccgtcat cggccgcgac cacaatgacg 540
tggtgcgcga cgatatcgag atcclygtca cctgcccggg cgtcgggagc tacaccgcgc 600
gcgctgtggc cggcgccgtl caccggcgcc cgcagcccg tgcgcatcg gtgcgcgcgc 720
accaucggca cglcttggcg ctgttgccgc acccgagagc ggcgcctgaa ttttcggtcg 780
cgctgatgga gttggtgtcg acggtgtgca ccgcgcgac acccggtgc gggttatgcc 840
cgctggactg gtgcgcalgg cggcatgccg gttatccgc gtcgagcgg cggccgcgcg 900
gggggcaggg ctacaccgga accgacggcc aaqlccgcgg acggttactg gatgtgttgc 960
ggcgcccgga gttlccgct acccgggccg agttggagc ggcgtggctg accgataccg 1020
cacagcgtga ccgggctgct gaglccgctg tggccgatgc gctggtgacc cggacggteg 1080

```

```

atggccgggtt cgggtttccc ggcgaagggt tttagccggg taqgcggtcc gcaccggcgg 1140
cgccgaaacc gcccggatca cccgggttgc ccgcagcagc tgtcccagct ccccgggcgc 1200
caccgcgcgc gccagcgccg ccgcacctc cctggccccc ggtaccgccc gcaccgtgga 1260
cacctggctg gclgaacatt ccggcacctc cgcgggcacc tccggcaccg cc 1312

```

```

<210> 22
<211> 2806
<212> DNA
<213> Mycobacterium tuberculosis

```

```

<400> 22
ccgtctcgac tggcctacgc cgacgaacgt cgactagccg aggtggccga cgaactgac 60
gacaagctgc agagcgacgc ccccgccgcg ctcccgccgc taccaccag ctccgctcgt 120
cgaccggcgc aaacgcattc acgcgctcgt catgcgatg actcagcacc ggtcagcac 180
aacgggtccc ggcgggggccc gtgaccgac tgcaantcgg ctgggcccgt ttggcgccg 240
tcacctcagc gatcggcgtc gtggccgccc tcgggagggc gtcacggta ccgtcgccg 300
caccgcacgc gctcgacggc gaggccagcc cgacgccttt tgtccaggtc cgcacgac 360
aggtgacccc ggacglggtg accacttcca gcgaacccc tgtaaccgtc agcggaaagg 420
tgaccaatcc cggtagccgc ccagtcgcgc atgtgatggt ccggcttgag cagcccgcc 480
cggtagcgtc gtcacggggt taccgacact cgctcgacgc cggcaccgac cagtaccagc 540
cggccgcgga cttcctcagc gtgcggcccg aactagacc cgggcaagag gccggcttta 600
ccctctcggc ccgcgtgcgc tgcgtgacca ggcgctcgtt ggcgctaac cagcccgga 660
tctaccgggt cctgggccaac gtaaalggga cacccgacta cggtagccct gcgcggctc 720
acaatgcgcg gttcctgttg ccggtggcgc gagtgcacc cgaccaaggc accgacttc 780
gctccgctgt lgnaccagaa acgacggcgc cgggtctgat caccatgctg tggccgctg 840
ccgaccgccc ccggttgccc cccggggccc ccggtggcac cgttccgcgc cggctggctg 900
acgacgacct ggcaaacctc ctggccaacg cgggcgggct ggacatctc ctgctggcg 960
ccgagttcgc caccancccg gaagtgcacc ccgacggcgc cgtcggccga gcgctgtgc 1020
lggccaalga cccagatcta ctatcaccg tcaatgcgt gaccggcgcc taccgtgtg 1080
ccgactcgcc ccgacgggccc gctcaactac cgggcacccc gaccacccc ggcaccggc 1140
agcccgccgc atccagctg ctggalcgat tgcggacgct agtccacgg acatcgctga 1200
cgccgctgcc ttttgcacaa ggcgacctg atgctttgca gcgggttaat gatccgaggc 1260
tgagcgccal cgaacaccat agcccccgcg acatcgctga ccgcatcctg gatgtaagt 1320
ccaccgcgcg cgcaaccgtg ctgcccagac gcccggtgac cggccgggcg atcaactgc 1380
tcagcaccga cggcaacacg gttgcngtcg tccgcgctct taccgctac cgcgccccg cggttgtccc 1500
agggttcgtc ccagatcgcc tccgcgctct taccgctac cgcgccccg cggttgtccc 1560
cgccgggtgt agcggcgccc tttgatcccg cgtlccgggc cgcgctggcc gcccgcgga 1620
caaacccgac cgttctatcc latctagatc cctcgttgtt cgttcggatc gcgcatgaat 1680
cgatcaccgc ggcgcggccg gacgccttgc gcgcaatgct gtggcgccgc ttggagccga 1740
atgcgcgcgc ccgtacccaa alactgtgct cgcggcgctc gtggagcctg gccagcgac 1800
acgcgcaggt catcctgacc ggcgtgccc ccgcctccg gtctggcctg gccgtgccc 1860
gaccactacc ggcggtgale gctgacgcgc cggccgcgac cgagccacc gaacccccg 1920
gcgcttacag cgcgcctcgc ggcgggttca atgacgacat caccacgcag atcgcgggc 1980
aggttgcccg gctatggag ctgacctcgc cgttgacct cgatgaccgc accgggctga 2040
ccggcggtga gtacacgca cactacgcg aggcacatgt gcgcgcgclg agccaatcgc 2100
taccacccga taccgcgaac gggttgccc agcagcggtt ggcngctcgtt ggaagacga 2160
tcgacgatct tttcggcgcg gtqacnateg tcaaccggg cggctcctac actctggcca 2220
ccgagcacag tccgctgccc ttggcgctgc cccgggatga cggtagccga tgtcggtcag atcgagctac 2280
ggctacaggt cgtatgctcc cccgggatga cgaqtacaa tcgaggtgaa cttcacacag cgggttgccc 2340
cgcccggtga cclgcctgta cgaqtacaa tcgaggtgaa cttcacacag cgggttgccc 2400
tcgacgtgct gctcgcgacc cccgacggcg tcgagctggg tgaacgggtg cgggttgccc 2460
tgcaactcaa cgcclacggc aagggttgtt tcgagatcac gctatccgct cgggcgctgc 2520
tggtaacgct ggcggcgccc cgccttttgc accggttccc tggccagcct gatcgcgcc 2580
acctggatcg ccccgacctg ctaccggca aacacgccc gacgcgcgt gccgtagcca 2640
gtcgggatga cgaaaagcac cgggtatgay accctccct ggagaggtgc ccacggcatc 2700
gcagaggcag cccgagctgt ccgacgcggc gctggtatcg cactcctgg caatggcatt 2760
cgcgacgctg alcagccgga tcaccggctt tgcccgatc gtgctgctgg ccgcatctt 2806
agglcgcgcg ctggccagct cgttctcggg ggccaaccag ctgcng

```


<210> 23
 <211> 17
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Primer

<400> 23
 atcgtcggcg tgccgtg 17

<210> 24
 <211> 17
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Primer

<400> 24
 gtcagcgtcc tgcccg 17

<210> 25
 <211> 20
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Primer

<400> 25
 gtcacgtctg ttaggcctc 20

<210> 26
 <211> 17
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Primer

<400> 26
 cgcgcacgg ctgcgg 17

<210> 27
 <211> 1458
 <212> DNA
 <213> Mycobacterium tuberculosis

<400> 27
 gtgcacgacg acttcgaacg ctgctaccgg gcgatccagt ccaaagacgc ccggttcgac 60
 ggctggttcg tcgtcgcggt ttgaccacc ggtgtctact gcggccgag ttgccccgtc 120
 cggccacggt tcggcgcaaa tgcccggttc ctgccgactg cggcgccgc tcagggggag 180
 ggattccggg cctgcaaacg gtcccgcccc gacgctcgc ctgggtctcc ggaatggaat 240
 gtgcgtatg acgtcgtggc gcggcgatg cggctgattg ccgacggaac ggtggaccgc 300
 gacggtgta gcggcctcgc ggcacagctc ggttacacca ttgccagct ggagcggctg 360
 ttgcaggcgg tggtcggcgc cggtcagctc gcgttgccc gcgccaacg catgcagacc 420

```

gcccgggtgc tgatcgagac caccgaactg cegttcgccg atgtcgcaat cgcgcggg 480
ttttccagca tccgicagtl caacgacacn gttcgccgtg cgtgcgacgg cacaccgag 540
gcattgcgtg cgcgcggggc cgcgcgattc gagtctgcca ccgcacagc gggcacgggtg 600
tcgctgcggc tacccgccg tgcaccattc gccttcgagg gtgttttcgg ccatctggcc 660
gccaccggcg tgcgcgggtg cgaagaggtc cgcgatggtg cgtaccgagc caccgclacg 720
ctcccatggg gcaacggcat cgtcagctg acccgggcac ccgatcatgt gcgctgctg 780
cltgtgctcg atgatttcg cgaactgatg acggcnactg caegtgtccg acggctgctg 840
gaactcgagc ccgatcccg aagcagctgc gaggcgctgg gcgcgcatcc ggatctgcgc 900
gcaqlggtg gcaaggcac cgggcaacgc attcccgca cagtcgacga ggcagaattc 960
gcgctgcggg cggctcctgc ccaacaggta tcgacgaagg ccgcaagcac tcacgcgggc 1020
cgactggcgc cgcctacgg accgcccgtc cagcatcgcc accgcccgtt gaccacacc 1080
ttcccgctga tcgagcagct cgcclgagac galcccgcc atctggccgt ccccaagcg 1140
cgtcaaggga ccataaacgc gctcgtcgcc gccggatgtg actggcaacg cgcgcggcg 1200
cagtlgtcag cgcclgcccg agtgggccc tgaccgcgg aggtcatcgc catgcgcgc 1260
ctcggtgacc cggagcctt tccggccagt gatctcgcc tgcggctggc cgcacaaaag 1320
ctgggctgc ctgcacacg accagccctg accgtgcaca gcgctcgtg gcgcctctg 1380
cgtcctatg ccacccagc cctgtggac accctggaac atccggtaaa ccaatggcc 1440
ccgcaggaga agatcgca 1458

```

<210> 28
 <211> 495
 <212> DNA
 <213> Mycobacterium tuberculosis

```

<400> 28
atqattcacl accgcacat cgatagccc atcgggccat taacctggc cgggcattgc 60
tcggtgttga cgaaccgag gatgctcgg cagacgtatg agccnagcg cacacactg 120
acaccgacc cggcgcaat ttctggcgct gtcgaccaac tcaacgctta ttctgcggc 180
gagctcaccg aattcgatgt ggaactgac ctccgggaa ccgactttca gcaacgagta 240
tggaaagcat tgcctgacaat cccgtacggg gaaaccgggt cctacgggga aatcgccgac 300
cagatcgggc ccccggggc cgcacgcgcc gtgggattgg ccaacggcca caatcccatc 360
gccatcatcg tcccgctgca ccgctgcatc ggcgcagcg gaaagctcac cgggtacggc 420
ggtggaatca accggaaacg agctctctc gagttggaga aaagccgggc gccgcagac 480
ttgacgctcl tcgac 495

```

<210> 29
 <211> 423
 <212> DNA
 <213> Mycobacterium tuberculosis

```

<400> 29
atgctgaatc agacgtggc tgcggagac atcgtccgc gttgcacggt ctggtggcg 60
caacgcgttc ggcacggga gtggcggt cgttgggaac tcccgccg taaggtcgc 120
gccgcgaaa ccgagcgcc cgcgctggcc cgagagctc ccgaagaac gggactcgag 180
gtgcgcgacc tcgcggtgg cgaacgtgtg ggcgacgata ttgcgttgaa cggcacgag 240
acgctgcgg cctalcgct gcctctgctt ggcggcgaa ccgctgcgc tgaccaccg 300
gcgctgctg ggtgacggc ggcggaactg cagcatgtc acgggtacc agccgacgc 360
ggttqgattg cgcacctgc gcgaacctc aacgggtcc cgcagatgt ccaccgtgc 420
tql 423

```

<210> 30
 <211> 744
 <212> DNA
 <213> Mycobacterium tuberculosis

```

<400> 30
gtgtccgagc gcgaacaagc caatcacgt cgaacggcg ggcggcgcc cgggcgggc 60
gctgcggcta cagcagaga tcacatggc gcccaaccg ccggcgagc caccacgac 120

```

```

ccggcaacgg cgaaguggtc ccggtccgc tcacctcgtc qcgggtcgac tcggatgcgc 180
accgtgcacg aaacatcggc tggaggggtg gtcaltgacy gtatcgacgg tcacqagac 240
gcgcagggtc cggctctgat cggcccgctc gaccggcgcg gccggtgct gtggtcgcta 300
cccaaggggc acatcgagtt gggcgagacc gccgagcaga ccgccalcgg cggagtcgcc 360
gaqgagaccg gcatcccggg cagtgtgctc gccggtggtg gggcgatcga ctactgggtc 420
glcaccgacg gccggcggtt gcacnagacc qtcaccatt atttgatgcg gtttttaggc 480
ggagagctgt ccqacgaaga cctcgaggta gccgaggtag cctgggtgac galccgggaa 540
ctgccgtctc gactggccta cgcgcagcaa cgtcgactag ccgaggtggc cgacgaactg 600
atcgacaagg tgcagagcga cggcccgccc gcgttccgc cgtaccacc cagctcgct 660
cgtcgacggc cgcacaacga ttcacggcgt cgtcatgccg atgactcagc accgggtcag 720
cacaacggtc ccgggcccgg gccg 744

```

<210> 31
 <211> 912
 <212> DNA
 <213> Mycobacterium tuberculosis

```

<400> 31
atgctcaca tactgcggga accgtcggtg accggccgcg gacacatc agataccaat 60
cttctcgctt ggtatcagcg atcgaccggg gatctgcctt ggcgagacc cgggtgcagc 120
ccgtggcaga tcttggtcag cgagttcatg ctgcagcaga cgcggccgcg ccgggtgctg 180
gcgatctggc cggactgggt gcggcgglgg ccacgcggt cggccaccgc caccggccagc 240
accgcccgat ttttacggc ctggggcag ctgggtatc ccaggcgagc caagecgtta 300
caccagtgcg ccaccgtcal cgcgcgcgac cacaatgacg tggtgccga cgatatcgag 360
atcctggtea ccttgcgggg cgtcgggagc tacaccgcg gcgcgggtggc gtgtttcgct 420
taccqccagc ggggtgcggg ggtggacacc aatgtgcggc gcgtgggtggc ccgcgcgctt 480
caccggccgc cgacgcggg tgcgccatcg gtgcgcgcg accacgcga cgtcttggcg 540
ctgttgccgc acccgagac ggcgcctgaa ttttcggtcg cgtgatgga gttgggtgcg 600
accggtgtca ccgcccgcac accccggtgc gggttatgcc cgtggaactg gtgcgcagtg 660
cggcatgccc qltatccgc glcggagcgt ccgcgcggcc gggggcaggc ctacaccgga 720
accgaccgac aaqlccgcyg accgttaact gatgtgttc gcgcgcggga gtttcccgtc 780
accgaggccg agttggaggt ggcgtggctg accgataccg caccagcgtg ccgggcgctg 840
gagtcgctgc tggccgatgc gctggtgacc cggacggtcg atggccggtt cgggttgccc 900
ggcgaagggt tt 912

```

<210> 32
 <211> 2406
 <212> DNA
 <213> Mycobacterium tuberculosis

```

<400> 32
gtgaccgcac lgcacatcgg ctgggcccgt tlggcgcgg tcacctcagc gatcggcgtc 60
gtggccgggc tcgggatggc gctcacggtc ccgtcggcgg caccgcagc gctcgagac 120
gaqcccagcc cgaccccttt tgtccaggtc cgcacatcag aggtgacccc ggacgtgggtg 180
accacttcca gcgaacccca tgtcacgctc agcggaaagg tgaccaatac cggtgaccgc 240
ccaglcggcg atgtgatggc ccggctttag caccgcggcg cggtcacgct glcaacggcg 300
ttacgcacct cgtcgacgg cggcacggac cagtaccagc cggccggcga ctctctcag 360
gtgccccccg aactagaccg cggqcaagag gccggcttta cctctcggc ccgctgccc 420
tcgctgacca ggcgcgtcgtt ggcgctcaac cagccgggga tctaccgggt cctggtcaac 480
gtcaatggga caccgacta cggtgccct gcgcggctcg acaatgcgg gttcctgttg 540
ccggtggtcg gagtgcaccc cgaccaggcc accgacttcg gntccgctgt tgcaccagaa 600
accagggcgc cggctctggat caccatgctg tggccqctgg ccgaccggcc ccggttggcc 660
cccggggac ccggtggcag cgttcccgtc cggctggtcg accagacat ggcaacatcg 720
ctggccaacg gcggccggct ggacatctc cgtctggcg ccgagttcg caccaaccgg 780
gaagtcgacc ccgagggcgc cglcggccga gcgctgtgct tggccatcga ccagatcta 840
ctcatcccg tcaatcgat qaccggcgcc taccgtcgtt ccgactcgc cgacggggcc 900
gctcaactac cgggcacccc gaccacccg qyccacggcc aggcgcggc atccagctgg 960
ctggatcgat tgcggagcgt agtcacccg acatcgctga cgcgctgccc ttttggccaa 1020
gocgacntgg atgcttttga ggggtlaat gatccgaggg tguycggat cgcacacatc 1080

```

```

agccccgcgc acatcqlcga ccgcatcctg gatqlcagct ccacccgcgc cgcacccgtg 1140
ctgcccgaac gcccggttgac cggccggggc atcaacttgc tcaqcaccca cggcaacacg 1200
gltgcgcgtc cggccgcgcga ttttagcccc gaggaacacg aggggttcgtc ccagatcggc 1260
tcgcgcgtct taccgcgtac cgcgcgcgcg cggltgtccc cgcgggtggt agcggcgccg 1320
ttlgatcccg cggtcggggc cgcgttgcc gccgcgggaa caaacccgac cgttcctacc 1380
tatctagalc cctcggttgtt cgttcggate ggcgatgaat cgatcacgc gcgcgcgcag 1440
gacgccttgg gcgcaatqcl gtggcgagc ttggagcga atgcgcgcgc ccgtacccaa 1500
atcctgqlgc cgcgcgcgtc gtggagcctg gccagcgacg acgcgcagyt catcctgacc 1560
gcgctggcca ccgccalcgc gtctggcctg gccgtgcgc gccactacc ggcgggtgatc 1620
gclgacgcgc cggccgcgac cgcgcgcgc gaacccccgc gcgcttacg cgcgcgtcgc 1680
ggcgggttca atgacgacat caccgcgcg atcggcggc aggttgcccg gctatggaag 1740
ctgaccclcg cgttgaccat cgatgacgc accgggctga ccggcgtgca gtacaccgca 1800
ccactacgcg aggacalgtt gcgcgcgcgt agccaatgc taccacccga taccgcgaac 1860
qgcctggccc agcgcgcggt ggccgtcgtt ggaagagcga tcgacgatct tttcggcgcg 1920
gtgaccatcg tcaacccggg cggctcctac actctggcca ccgagcacg tccgctgccg 1980
ttggcgctgc ataatygccl cgcgcgtgcca atccgggtcc ggcctacaggt cgatgctccg 2040
cccgggatga cggtgccga tgtcgglcag atcgagctac cgcgcgggta cctgcgccla 2100
cgagtaccaa tcgagylqaa cttcacacag cgggttgccg tcgacgtgtc gctgcggacc 2160
cccgacggcg tcgcgcclgg tgaacgggtg cgggtgtcgc lgcactccaa cgcctacggc 2220
aaggtgttgt tcgcgatcac gctatccgt gccgcgcgtc tggtaacgct qgcgggcgcg 2280
cgcccttggc accgggttcg tggccagcct gatcgcgccg acctggtatg ccccgacctg 2340
cctaccggca aacacgcgcc qcagcgccgt gccgtagcca gtcgggatga cgaagagcac 2400
cgggta 2406

```